

CLAIMS

1. A Doherty amplifier having:
 - a carrier amplifier which is performing a signal amplifying operation at all times irrespective of an input signal level;
 - a peak amplifier which performs an amplifying operation only
 - 5 when the input signal level increases to a certain level or higher to generate high power;
 - an output combiner circuit for combining the outputs of said carrier amplifier and said peak amplifier to deliver a combined output; and
 - an input branching circuit for distributing an input signal to said
 - 10 carrier amplifier and to said peak amplifier,
 - said Doherty amplifier characterized by comprising:
 - a first pre-distortion compensation circuit disposed at a stage previous to said carrier amplifier and having such characteristics that compensate said carrier amplifier for a distortion characteristically produced
 - 15 on the operation of said carrier amplifier; and
 - a second pre-distortion compensation circuit disposed at a stage previous to said peak amplifier and having such characteristics that compensate said peak amplifier for a distortion characteristically produced on the operation of said peak amplifier.
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2. A Doherty amplifier having:
 - a carrier amplifier which is performing a signal amplifying operation at all times irrespective of an input signal level;
 - a peak amplifier which performs an amplifying operation only
 - 5 when the input signal level increases to a certain level or higher to generate

high power;

an output combiner circuit for combining the outputs of said carrier amplifier and said peak amplifier to deliver a combined output; and

an input branching circuit for distributing an input signal to said carrier amplifier and to said peak amplifier,

said Doherty amplifier characterized by comprising:

a pre-distortion compensation circuit disposed at a stage previous to said carrier amplifier and having such characteristics that compensate said carrier amplifier for a distortion characteristically produced on the operation of said carrier amplifier.

3. A Doherty amplifier having:

a carrier amplifier which is performing a signal amplifying operation at all times irrespective of an input signal level;

a peak amplifier which performs an amplifying operation only when the input signal level increases to a certain level or higher to generate high power;

an output combiner circuit for combining the outputs of said carrier amplifier and said peak amplifier to deliver a combined output; and

an input branching circuit for distributing an input signal to said carrier amplifier and to said peak amplifier,

said Doherty amplifier characterized by comprising:

a pre-distortion compensation circuit disposed at a stage previous to said peak amplifier and having such characteristics that compensate said peak amplifier for a distortion characteristically produced on the operation of said peak amplifier.

4. The Doherty amplifier according to claim 1, wherein the distortion compensated for by said first and second pre-distortion compensation circuits is an amplitude-phase distortion.

5. The Doherty amplifier according to claim 2 or 3, wherein the distortion compensated for by said pre-distortion compensation circuit is an amplitude-phase distortion.

6. A method of compensating a Doherty amplifier for a distortion characteristic, said Doherty amplifier having a carrier amplifier which is performing a signal amplifying operation at all times irrespective of an input signal level, a peak amplifier which performs an amplifying operation only
5 when the input signal level increases to a certain level or higher to generate high power, an output combiner circuit for combining the outputs of said carrier amplifier and said peak amplifier to deliver a combined output, and an input branching circuit for distributing an input signal to said carrier amplifier and to said peak amplifier, said method comprising the steps of:
10 distributing an input signal to said carrier amplifier and to said peak amplifier by said input branching circuit;
compensating a signal distributed to said carrier amplifier by said input branching circuit for a distortion characteristically produced on the operation of said carrier amplifier;
15 compensating a signal distributed to said peak amplifier by said input branching circuit for a distortion characteristically produced on the operation of said peak amplifier;

amplifying the signal by said carrier amplifier after the signal
has been compensated for the distortion characteristically produced on the
20 operation of said carrier amplifier;

amplifying the signal by said peak amplifier after the signal has
been compensated for the distortion characteristically produced on the
operation of said peak amplifier; and

combining the outputs of said carrier amplifier and said peak
25 amplifier to deliver a combined output.

7. A method of compensating a Doherty amplifier for a distortion
characteristic, said Doherty amplifier having a carrier amplifier which is
performing a signal amplifying operation at all times irrespective of an input
signal level, a peak amplifier which performs an amplifying operation only
5 when the input signal level increases to a certain level or higher to generate
high power, an output combiner circuit for combining the outputs of said
carrier amplifier and said peak amplifier to deliver a combined output, and an
input branching circuit for distributing an input signal to said carrier amplifier
and to said peak amplifier, said method comprising the steps of:

10 distributing an input signal to said carrier amplifier and to said
peak amplifier by said input branching circuit;

compensating a signal distributed to said carrier amplifier by
said input branching circuit for a distortion characteristically produced on the
operation of said carrier amplifier, amplifying the signal by said carrier
15 amplifier after the signal has been compensated for the distortion
characteristically produced on the operation of said carrier amplifier;

amplifying the signal distributed to said peak amplifier by said

input branching circuit by said peak amplifier; and
combining the outputs of said carrier amplifier and said peak
20 amplifier to deliver a combined output.

8. A method of compensating a Doherty amplifier for a distortion characteristic, said Doherty amplifier having a carrier amplifier which is performing a signal amplifying operation at all times irrespective of an input signal level, a peak amplifier which performs an amplifying operation only
5 when the input signal level increases to a certain level or higher to generate high power, an output combiner circuit for combining the outputs of said carrier amplifier and said peak amplifier to deliver a combined output, and an input branching circuit for distributing an input signal to said carrier amplifier and to said peak amplifier, said method comprising the steps of:
10 distributing an input signal to said carrier amplifier and to said peak amplifier by said input branching circuit;
compensating a signal distributed to said peak amplifier by said input branching circuit for a distortion characteristically produced on the operation of said peak amplifier;
15 amplifying the signal distributed to said carrier amplifier by said input branching circuit by said carrier amplifier;
amplifying the signal by said peak amplifier after the signal has been compensated for the distortion characteristically produced on the operation of said peak amplifier; and
20 combining the outputs of said carrier amplifier and said peak amplifier to deliver a combined output.

9. The method of compensating a Doherty amplifier for a distortion characteristic according to claim 6, wherein the distortion characteristically produced on the operation of said carrier amplifier and the distortion characteristically produced on the operation of said peak amplifier are amplitude-phase distortions.

10. The method of compensating a Doherty amplifier for a distortion characteristic according to claim 7, wherein the distortion characteristically produced on the operation of said carrier amplifier is an amplitude-phase distortion.

11. The method of compensating a Doherty amplifier for a distortion characteristic according to claim 8, wherein the distortion characteristically produced on the operation of said peak amplifier is an amplitude-phase distortion.